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Installation
and Operation
Instructions
with Parts List

**Culligan Medallist and
Medallist Plus Series[®]
Automatic Water Filters
with Cullar[®], Cullneu[®], or Cullsan[®] Media**

Models from 2007

Culligan[®]

Attention Culligan Customer:

Your local independently operated Culligan dealer employs trained service and maintenance personnel who are experienced in the installation, function and repair of Culligan equipment. This publication is written specifically for these individuals and is intended for their use.

We encourage Culligan users to learn about Culligan products, but we believe that product knowledge is best obtained by consulting with your Culligan dealer. Untrained individuals who use this manual assume the risk of any resulting property damage or personal injury.



Warning! Prior to servicing equipment, disconnect power supply to prevent electrical shock.

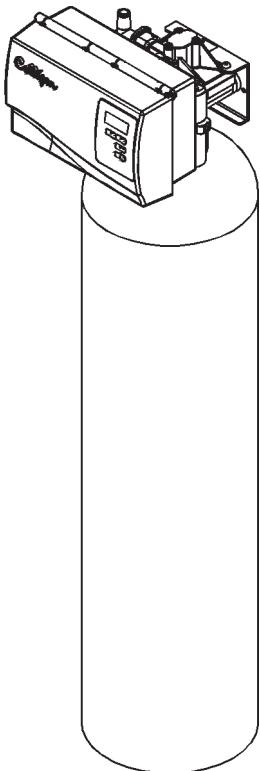
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Introduction

This system and installation must comply with state and local regulations.

For installations in Massachusetts, the Commonwealth of Massachusetts Plumbing code 248 CMR shall be adhered to. Consult with your licensed plumber for installation of this system. The use of saddle valves are not permitted.

The Culligan Medallist Plus Series® with Cullar® filter has been tested and certified by WQA against WQA S-200 for the effective reduction of chlorine taste and odor up to 180,000 gallons.

The Culligan Medallist Plus Series® with Cullneu® Filter has been tested and certified by WQA against WQA S-200 for neutralization up to 21,750 gallons as verified and substantiated by test data.



Safe Practices

Throughout this manual there are paragraphs set off by special headings.

NOTE: Note is used to emphasize installation, operation or maintenance information which is important, but does not present any hazard. Example:

Note: *The nipple must extend no more than 1 inch above the cover plate.*

Caution! Caution is used when failure to follow directions could result in damage to equipment or property. Example:



Caution! Disassembly while under water pressure can result in flooding.

WARNING! Warning is used to indicate a hazard which could cause injury or death if ignored. Example:



Warning! Electrical shock hazard! Unplug the unit before removing the timer mechanism or coverplates!

The Culligan water filter has two separate serial numbers; one for the control assembly and one for the media tank. The control assembly serial number can be found on the left rear side of the timer mounting plate. The media tank serial number is on the side of the tank. **DO NOT REMOVE OR DESTROY THESE SERIAL NUMBER DECALS. THEY MUST BE REFERENCED IF EVER YOU REQUIRE REPAIRS OR PARTS REPLACEMENT UNDER WARRANTY.**

If you wish to service your system or maintain replacement components, please contact your local Culligan dealer or 1-847-205-6000 for a dealer near you.

This publication is based on information available when approved for printing. Continuing design refinement could cause changes that may not be included in this publication.

Please read this booklet carefully before beginning the installation of the Culligan Medallist Series™ Water Filter. It contains important information about the unit, including the tools and materials needed for installation, accessories available for hook-up to the plumbing, and instructions covering installation, settings, start-up, and operation. The Culligan Medallist Water Filters have been thoughtfully designed and engineered to provide conditioned water for many years when properly applied, installed and operated.

Specifications and Limitations

	8 Inch Medallist	10 Inch Medallist	10 Inch Medallist Plus
General			
Mineral Tank Size ¹	8 x 44 in.	10 x 54 in.	10 x 54 in.
Control	3/4" Power Valve	3/4" Power Valve	1" Power Valve
Timer	Electronic	Electronic	Electronic
Temperature Limits	33-120°F	33-120°F	33-120°F
Water Pressure Limits	20-125 psi	20-125 psi	20-125 psi
Electrical Requirements	24V/60 Hz	24V/60 Hz	24V/60 Hz
Electrical Power Consumption, Min./Max.	3 Watts/35 Watts	3 Watts/35 Watts	3 Watts/35 Watts
Filtr-Cleer®			
Rated Service Flow	7.8 gpm	8.9 gpm	12.0 gpm
@ Initial Pressure Drop	@ 15 psi	@ 15 psi	@ 15 psi
Minimum Practical Filtration Size	10 microns	10 microns	10 microns
Maximum Particulate Matter	150 NTU	150 NTU	150 NTU
Maximum Suspended Solids	150 mg/L	150 mg/L	150 mg/L
Drain Flow, Maximum ³	4.5 gpm	7.0 gpm	7.0 gpm
pH Limitation	6.0 - 9.5	6.0 - 9.5	6.0 - 9.5
Recharge Time ⁴	80 min.	80 min.	30 min.
Recharge Water Consumption, Av. ⁵	100 gal.	115 gal.	140 gal.
Freeboard ²	10.5 ± 1 inches	11.5 ± 1 inches	19 ± 1.5 inches
Height Overall	51 in.	63 in.	60 in.
Cullar®			
Rated Service Flow	4.0 gpm	4.0 gpm	6.0 gpm
@ Pressure Drop	@ 5.0 psi	@ 5.0 psi	@ 6.0 psi
Drain Flow, Maximum ³	2 gpm	6.0 gpm	6.0 gpm
pH Limitation	5.0 - 11.0	5.0 - 11.0	5.0 - 11.0
Recharge Time ⁴	80 min.	80 min.	30 min.
Recharge Water Consumption, Av. ⁵	53 gal.	83 gal.	110 gal.
Cullar Media Volume	0.75 cu. ft.	1.0 cu. ft.	1.5 cu. ft.
Cullsan® Underbedding Media Amount	10 lbs. (.1 ft ³)	20 lbs. (.2 ft ³)	20 lbs. (.2 ft ³)
Freeboard ²	14 ± 1 inches	24 ± 1 inches	24 ± 1.5 inches
Height Overall	51 in.	63 in.	60 in.
Rated Capacity	100,000 gallons	130,000 gallons	180,000 gallons
Cullneu®			
Rated Service Flow	2.7 gpm	4.0 gpm	6.0 gpm
@ Pressure Drop	@ 3.0 psi	@ 4.0 psi	@ 5.0 psi
Drain Flow, Maximum ³	3.5 gpm	6.0 gpm	6.0 gpm
pH Limitation*	5.8 - 6.2	5.8 - 6.2	5.8 - 6.8
Recharge Time ⁴	80 min.	80 min.	30 min.
Recharge Water Consumption, Av. ⁵	53 gal.	83 gal.	110 gal.
Cullneu Media Volume	1.0 cu. ft.	1.5 cu. ft.	1.6 cu. ft.
Freeboard ²	11 ± 1 inches	21 ± 1 inches	18 ± 1.5 inches
Height Overall	51 in.	63 in.	60 in.

1 Bottom of tank to top of tank fittings.

2 Backwash at 120 psi line pressure.

3 Backwash at 120 psi line pressure.

4 Factory setting.

5 At factory setting and 120 psi line pressure.

6 Top of media to back top edge of port openings.

* Under dynamic conditions, it may be necessary to mix five parts Cullneu with one part Cullneu C to effectively raise the pH. The combination of Cullneu and Cullneu C is not certified by WQA.

Component Description

Control Valve Assembly

The reliable Power Valve directs the flow of water during recharge. Constructed of durable, non-corroding materials, the piston-operated design assures positive, accurate positioning even on turbid problem water supplies. Time and frequency of recharge are controlled by an adjustable, yet simple, circuit board. The circuit board can be adjusted to suit a wide range of water types and family sizes.

Media Tank

The media tank contains the outlet manifold.

Note: *The media tank assemblies do not contain filter media, which is shipped separately. See the section on Installation Procedure (Page 9).*

Bypass Valve

Includes the Cul-Flo-Valv®, interconnecting coupling and screws or clips necessary for assembly.

Preparation

The success of the installation will depend to a great extent on advance planning and preparation. Careful attention to the unit's location, accessibility to electrical and drain facilities, and the availability of the proper tools will ensure a professional looking installation. Of utmost importance is the assurance that the filter has been properly applied and meets all specifications.

Application

Correct application is directly associated with the performance and life expectancy of any water conditioner. It is important, therefore, to understand how your Culligan® Water Filter functions, and to know its capabilities and limitations so that a correct application can be made. By following the guidelines and recommendations set forth in this manual, you can be certain your conditioner is applied correctly.

Filtr-Cleer®

The Medallist Filtr-Cleer Water Filter is capable of reducing particulate matter down to 5 microns particle size. It will not remove color, organics, colloidal turbidity or dissolved solids. Some applications follow:

- Reduction of suspended matters in any water system.
- Reduction of particulate matter, such as clay, mud, etc.
- Prefiltration of oxidized iron ahead of an automatic or manual softener.
- Reduction of light sand.

Note: If sands cannot be removed from the Filtr-Cleer tank during backwashing, a sand trap should be installed.

- After the retention tank when a Cul-Cleer® system is used to correct hydrogen sulfide or colloidal suspension problems.

The quality and number of gallons filtered water between backwashes will depend upon the amount, type, and size of the particulate matter being filtered. If a water sample is sent to our laboratory, where application of a Filtr-Cleer unit is contemplated, write "Filtr-Cleer Analysis" on the sample tag. Send an additional sample of water for a standard water analysis. The laboratory will test for Nephelometric Turbidity Units (NTU) and suspended solids (mg/L). The sample will also be filtered through 10 micron filter paper and NTU run on a filtered sample. If the NTU of the raw water exceeds 150, suspended solids exceed 150 mg/L or the filtered water through the 10 micron filter paper is of an unacceptable quality, a Filtr-Cleer filter may not be applicable. As a guide, the U.S. Public Health Drinking Water standards states the turbidity should not exceed 1 NTU. The exact number of gallons filtered between backwashes cannot be given because of many variables.

Cullar® Filter

Medallist Water Filter with Cullar Media will reduce chlorine taste and odor and other common bad tastes and odors, and will also remove most objectional organic colors. It will not remove hydrogen sulfide. It is important to note that whenever the cause of an objectionable taste or odor has not been established, Health Authorities should determine if water is safe to drink. If bacterial contamination is present, a Cul-Cleer system is indicated. Do not use with water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system.

Cullneu® Filter

Medallist Water Filter with Cullneu Media will neutralize slightly acid water (pH of 5.8 - 6.2) and thus help to prevent unsightly brown or green stains due to corrosion of household plumbing. If the pH is from 5 to 6, one part of Cullneu C media should be mixed with 5 parts of Cullneu media to provide additional neutralizing capability. If the water to be treated has a pH less than 5, a high hardness, or a high carbon dioxide level, Cullneu may not be applicable; a solution feeder should be used. Since Cullneu adds hardness, it should be used prior to a softener.

In order to size and apply the equipment correctly, a complete analysis of the water supply should be obtained. This can best be accomplished by contacting the local Culligan dealer, who will be able to test the water supply right at the site, or arrange to have one or more water samples sent to the Culligan laboratory for a more detailed analysis.

Culligan water filters may be applied alone or in conjunction with other equipment. They should only be applied, however, within the specifications listed in this manual. These specifications establish the boundaries within which the conditioner will perform most efficiently.

Pressure

The filter is designed to operate within a pressure range of 20 to 125 psi. Pressures below 20 psi may cause the unit to perform and recharge inefficiently, while pressures above 125 psi can cause damage and noisy operation of the control valve.

Low pressure is generally not a problem with municipal water supplies, although some adjustments of the well pump system may be required on private supplies. Although uncommon, some municipal supplies may exceed the high pressure limit. A pressure reducing valve should be installed if such pressures are encountered. Keep in mind, also, that some municipal supplies have higher pressure during nighttime hours.

Check the available water pressure with a gauge assembly to determine what adjustments, if any, are necessary (Figure 1). Place the gauge on a raw water line and open a nearby faucet. Adjust the faucet until the flow is about 5 gallons per minute and check the pressure. In the case of a private well system, allow water to run until the pump cuts in. If the pressure is less than 20 psi at this point, adjust the pump pressure switch as required to raise the cut-in pressure above 20 psi.



Figure 1

Pressure Drop

Whenever water is flowing, a certain amount of pressure is lost due to resistance from pipe, fittings, and appliances connected to the water supply. The amount of pressure drop encountered depends on how fast the water is flowing and how much resistance it meets. The amount of pressure available at a tap is also determined by its height above the source of the supply. For example, if water pressure in the basement is 50 psi, it will be about 45 psi on the ground floor, and about 40 psi on the second floor, or a reduction of about 5 psi for every 10 feet of elevation.

Particularly in the case of private water supplies, it may be necessary to increase the pump pressure to overcome pressure drop through the conditioner so that adequate pressure is available at all taps.

As the filter bed becomes loaded with the particulate matter it has removed, pressure drop will increase. The filter must be backwashed when the pressure drop reaches unacceptable levels. The filter should always be installed prior to the water heater.



Caution! The use of a pressure reducing valve may limit the flow of water in the household.

Temperature

Do not install the unit where it might freeze, or next to a water heater or furnace or in direct sunlight. Outdoor installation is not recommended, and voids the warranty. If installing in an outside location, you must take the steps necessary to assure the filter installation plumbing, wiring, etc. areas well protected from the elements (sunlight, rain, wind, heat, cold), contamination, vandalism, etc. as when installed indoors.

Location

Space requirements - Allow 6-12 inches (15-30 cm) behind the unit for plumbing and drain lines.

Floor surface - Choose an area with solid, level floor free of bumps or irregularities.

Drain facilities - Choose a nearby drain that can handle the rated drain flow (floor drain, sink or stand pipe). Refer to the Drain Line Chart, Table 1 page 13, for maximum drain line length.

Note: Most codes require an anti-siphon device or air gap. Observe all local plumbing codes and drain restrictions. The system and installation must comply with all state and local laws and regulations.

For installations in Massachusetts, the Commonwealth of Massachusetts Plumbing code 248 CMR shall be adhered to. Consult with your licensed plumber for installation of this system. The use of saddle valves are not permitted.

Electrical facilities - A 10-foot cord and wall mount plug-in transformer are provided. The customer should provide a receptacle, preferably one not controlled by a switch that can be turned off accidentally. Observe local electrical codes.

Note: The filter works on 24 volt - 60 Hz electrical power only. Be sure to use the included transformer. Be sure the electrical outlet and transformer are in an inside location to protect from moisture. Properly ground to conform with all governing codes and ordinances.

Note: P.N. 01012956 plug-in transformer is rated for indoor installations only.

P.N. 01015972 plug-in transformer is rated for indoor/outdoor installations.

Tools and Materials

The following tools and supplies will be needed, depending on installation method. Observe all applicable codes.

All Installations

- Safety glasses
- Phillips screwdrivers, small and medium tip
- Gauge assembly (PN 00-3044-50 or equivalent)
- Silicone lubricant (PN 00-4715-07 or equivalent) - DO NOT USE PETROLEUM-BASED LUBRICANTS
- A bucket, preferably light-colored
- Towels

Special Tools

- Torch, solder and flux for sweat copper connections
- Threading tools, pipe wrenches and thread sealer for threaded connections
- Saw, solvent and cement for plastic pipe connections

Materials

- Drain line, 1/2" (PN 00-3030-82, gray, semi-flexible; or PN 00-3319-46, black, semi-rigid; or equivalent)
- Thread sealing tape
- Pressure reducing valve (if pressure exceeds 125 psi)
- Pipe and fittings suited to the type of installation
- Plastic pipe (if permitted by local plumbing codes) — saw, solvent cement and rags

If the household plumbing is galvanized and you intend to make the installation with copper, or vice versa, obtain dielectric unions to prevent galvanic (dissimilar metal) corrosion.

All installations will require 1/2" drain line, (PN 00-3030-82, gray, semi-flexible; or PN 00-3319-46, black, rigid). Obtain slightly more than you think you will need to cover for the elevation over doorways and so on.

Filling Procedure

Filtr-Cleer® Water Filter

The 8" Filtr-Cleer filters are shipped with one media pack and the 10" Filtr-Cleer filters are shipped with two media packs. Verify that the proper number of media packs are on site before loading the tank. Place the manifold inside the tank. Position the tip of the manifold in the recess located in the bottom of the tank.

- Cover the top of the manifold with a clean rag.
- Place a wide-mouth funnel in the tank opening.
- Open the media pack(s) by cutting along the bottom of the carton and lifting up to expose the four individual media packages. See Figure 2.

Note: *The performance of the filter may be severely affected if the media is not added in the proper sequence shown.*

- With no water in the tank, slowly pour the Cullsan® U media into the tank.

Note: *The 10" filter uses only one bag of Cullsan U media pack. Shake tank to level the media.*

- With no water in the tank, slowly pour the Cullsan G-50 media into the tank and level.

Note: *The 10" filter requires the Cullsan G-50 from both of the media packs.*

- With no water in the tank, slowly pour the Cullsan A media into the tank and level.

Note: *The 10" filter requires the Cullsan A from both of the media packs.*

- With no water in the tank, slowly pour the Cullcite® media into the tank and level.

Note: *The 10" filter requires the Cullcite from both of the media packs.*

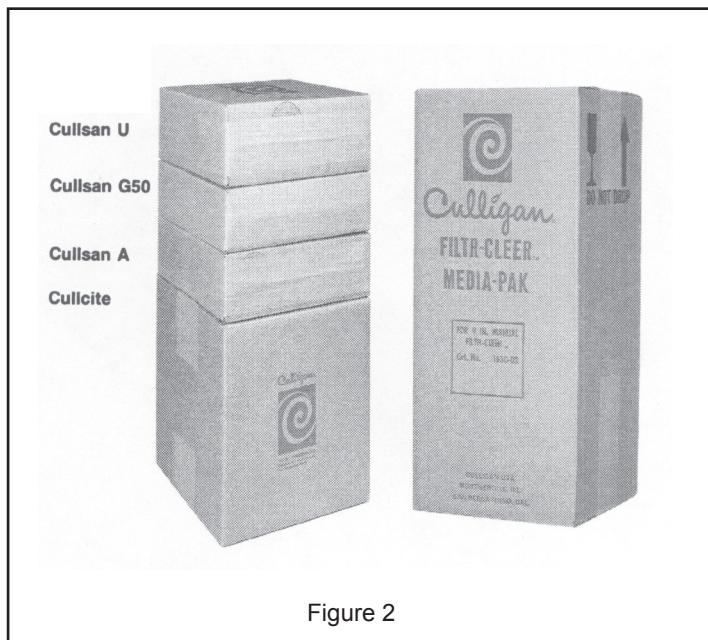


Figure 2

Cullar® Filters

Cullar filters are shipped with one cubic foot of carbon and a 20 lb bag of Cullsan underbedding. Verify that the proper amount of media is on site before loading the tank.

- Place the manifold inside the tank. Position the tip of the manifold in the recess located in the bottom of the tank.
- Cover the top of the manifold with a clean rag.
- Place a wide mouth funnel in the tank opening.
- Open the bag of Cullsan underbedding. On 8" Cullar units, slowly pour approximately half the contents of the bag into the tank. On 10" Cullar units, pour the entire contents into the tank. Shake the tank to level the media.
- Open the bag of carbon. On 8" Cullar units, slowly pour the carbon into the tank via the funnel until the carbon is within 13" - 14" of the top of the tank. On 10" Cullar units, slowly pour the entire contents of the bag into the tank. Shake the tank to level the media.
- Remove the rag from the manifold.
- Fill the tank with water and allow the media to soak for 24-48 hours. The water level in the tank will decrease as the media soaks up water. Add water to the tank to keep the media submerged so all of the media gets saturated.

Cullneu® Filters

Cullneu filters are shipped with 2 bags of Cullneu with 8" filters and 3 bags of Cullneu with 10" filters. Verify that the proper amount of media is on site before loading.

- Place the manifold inside the tank. Position the tip of the manifold in the recess located in the bottom of the tank.
- Cover the top of the manifold with a clean rag.
- Place a wide mouth funnel in the tank opening. The Cullneu media should be added with no water in the tank.
- For 8" Cullneu filters, slowly pour the entire contents of one bag of media and enough media from the second bag to raise the level of media in the tank to within 11" of the top of the tank.
- For 10" Cullneu filters, slowly pour the entire contents of two bags of media and enough media from the third bag to raise the level of media in the tanks to within 21" of the top of the tank.

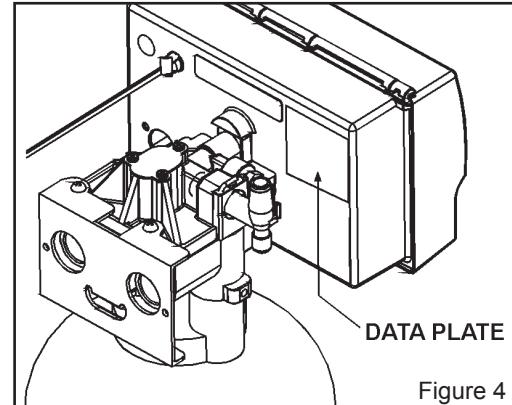
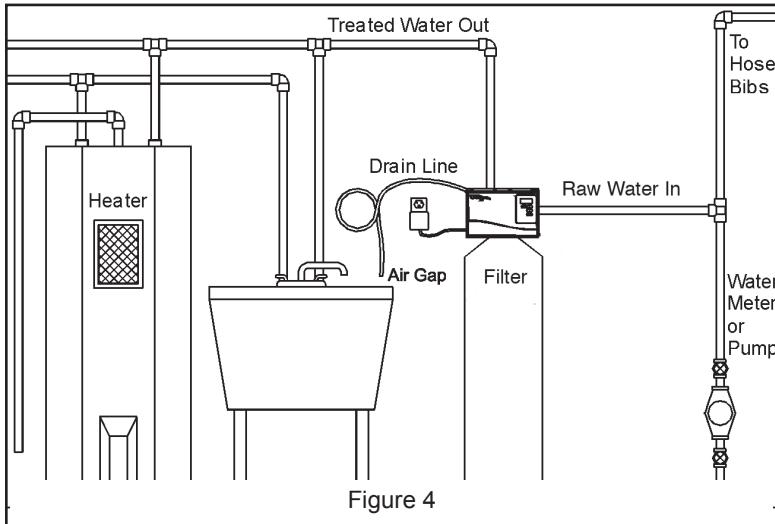
DO NOT OVERFILL. Overfilling will result in excess media being lost to drain during backwash, possibly plugging the control valve. Shake the tank to level the media.

Installation

Placement

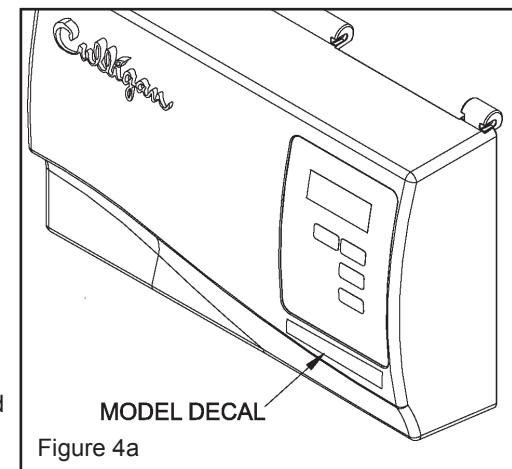
Refer to Figure 3 for system placement.

- Set the media tank on a solid, level surface near water, drain and electrical facilities. Place the outlet (black coupling) of the tank on the left.
- Set the brine system on a flat, smooth, solid surface as near the media tank as possible.



Install Decals

Locate the data plate decals and model decals packed with the control valve. Adhere them to the cover and backplate as shown in figures 4 and 4a.



Mount The Control Valve - 3/4" Control

See figure 10 for a visual on mounting the control valve to the tank.

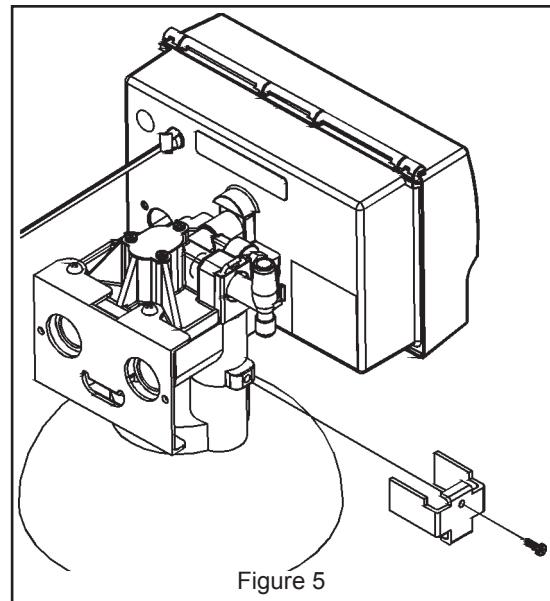
As shipped from the factory the Culligan Medallist Series® 3/4" control is equipped as a 8" unit.

1. Remove the two plastic caps from the tank couplings and lubricate the coupling O-rings with silicone lubricant.

Note: Do not use a petroleum base lubricant, for this will cause swelling of the rubber parts.

Note: The black molded tank adapter is marked with "IN" and "OUT", corresponding to the inlet and outlet of the tank. Position the tank with the inlet coupling on the right and the outlet coupling on the left as you face the front of the tank.

2. The control valve is marked also with "IN" and "OUT". Place the control onto the tank with the inlet and outlet of the control corresponding with the inlet and outlet of the tank. Press firmly onto the couplings.
3. Remove the two u-clamps and screws from the parts pack. Install the clamps on both sides of the control as indicated in Figure 5 and secure them with the screws.
4. Peel off the protective film off the circuit board label.



Mount The Control Valve - 1" Control

See Figure 6 for a visual on mounting the control valve to the tank.

- Assemble the o-rings, located in the parts pack, to the tank adapter.
- The valve adapter o-ring sits on the first step on the adapter. See Figure 7.

Note: Do not push the top o-ring down to the flange surface on the adapter.

Note: The larger of the two o-rings in the parts part goes between the adapter and the valve, do not stretch the smaller o-ring onto the top of the tank adapter.

- Lubricate only the top o-ring on the tank adapter, and the outlet manifold o-ring with silicone lubricant.
- Screw the adapter into the tank until the adapter bottoms out on the tank flange.

Note: The adapter only needs to be tightened hand-tight to the tank flange.

- Align the manifold with the center opening in the valve, and press the valve onto the adapter firmly.

Note: Make sure to push the valve straight down onto the manifold. If the valve is cocked, it may cause the o-ring to slip off the manifold.

- Assemble the tank clamp to the control, and tighten the clamp screw.

Note: The clamp and valve will be able to rotate on the tank until pressure is applied. Do not try to rotate control valve if the clamp is tightened - you may cut the o-ring.

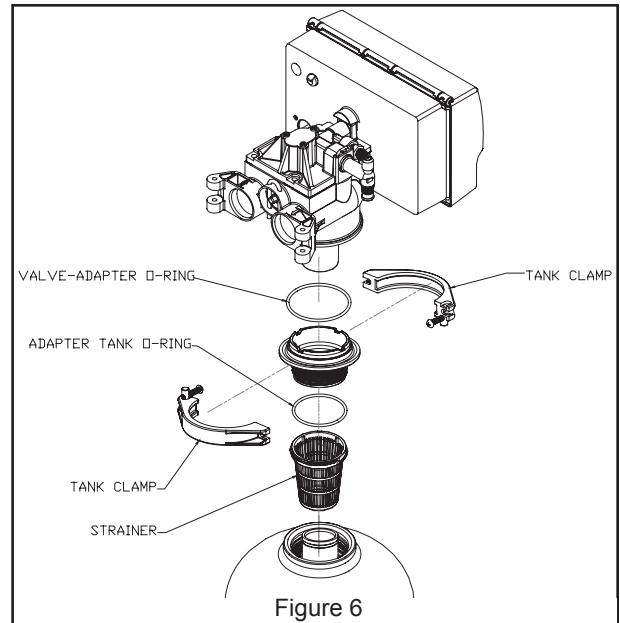


Figure 6

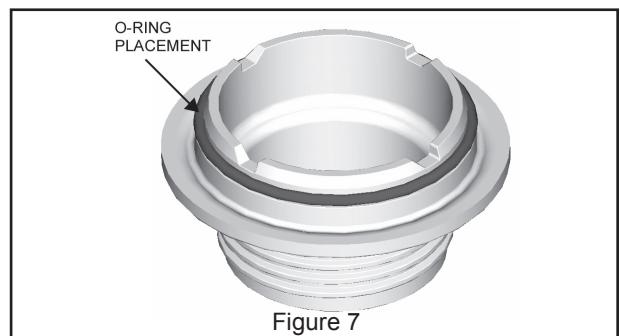


Figure 7

Install the Flow Control

As shipped from the factory, each control is equipped with a 2 gpm flow control for 8" Cullar® filters. Additional flow controls are included with each unit for conversion for use with other filter tanks. Refer to Table 1 to select the proper flow control.

Table 1

Filter	Flow Control	Color
8" Cullar	2.0 gpm	Brown
10" Cullar	6.0 gpm	Black
8" Cullneu®	3.5 gpm	Green
10" Cullneu	6.0 gpm	Black
8" Filtr-Cleer®	4.5 gpm	Red
10" Filtr-Cleer	7.0 gpm*	Black (Thin)

* Use with flow control spacer provided

For backwash flow control conversion, refer to Figure 8 and instructions listed below.

- Remove the u-clip of the drain elbow assembly and pull the drain elbow straight off.
- Remove the back wash flow control located behind the elbow. Put the correct restrictor in its place.
- Insert the flow control washer with the molded numbers facing toward the valve body. Refer to Table 1. For the 6.0 gpm flow control, insert the flow control with the molded "5.5" facing away from the valve body. Insert the plastic flow control spacer after the 7 gpm flow control washer on the 10" Filtr-Cleer. See Figure 8.
- Replace the drain elbow assembly and secure it with the u-clip.

Note: The number on the flow control should face into the valve body.

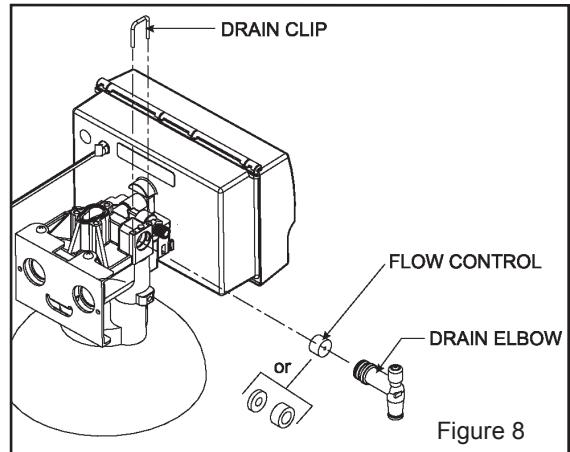


Figure 8

Plumbing Connections

General Instructions

- Follow local plumbing & electrical codes. Failure to do so may result in your having to redo the installation at your expense.
- Take the time to make a clean, professional looking installation. Use flux and solder sparingly when making sweat connections, and avoid excessive use of pipe compound. When using galvanized pipe, clean out excess cutting oil and metal chips before assembly. Foreign objects, if allowed to enter the control valve, can cause operating problems.
- The main water supply line may then be reopened so that hard water will be available to the household throughout the remainder of the installation process. Set the Cul-Flo-Valve Bypass in the bypass position by screwing the stem all the way in against the body.



Caution! Close the inlet supply line and relieve system pressure before cutting into the plumbing! Flooding could result if not done!

Bypass Connections

Shipped with each softener is a Culligan bypass valve, which is used to connect the softener to the plumbing system. The bypass allows the softener to be isolated from the water service line if service is necessary while still providing water to the home. The bypass valve can be directly plumbed into the system, or can be connected with the following optional sweat connection kits.

3/4" Medallist Control		Medallist Plus	
PN	Description	PN	Description
P1019783	3/4" Sweat Copper Adapter Kit	01010783	1" Sweat Copper Adapter Kit
P1019782	3/4" Elbow Sweat Copper Adapter Kit	01016564	3/4" Sweat Copper Adapter Kit
		01016565	3/4" Elbow Sweat Copper Adapter Kit

For installations in Massachusetts, Massachusetts Plumbing Code 248 CMR shall be adhered to. Consult your licensed plumber for installation of this system. This system and its installation must comply with state and local regulations.



Caution! Close the inlet supply line and relieve system pressure before cutting into the plumbing! Flooding could result if not done!



Caution! When making sweat connections, remove all plastic and rubber components which contact brass or copper. Damage to these components may result otherwise.

Bypass Valve Installation - 3/4" Medallist Time Clock Units Only

The bypass valve connects directly to the backplate of the valve with a pair of couplings and screws (Figure 9). To facilitate this connection, remove the plate by pulling up on the u-clip on the back of the valve and removing the two mounting screws. Lubricate all o-rings with silicone lubricant.

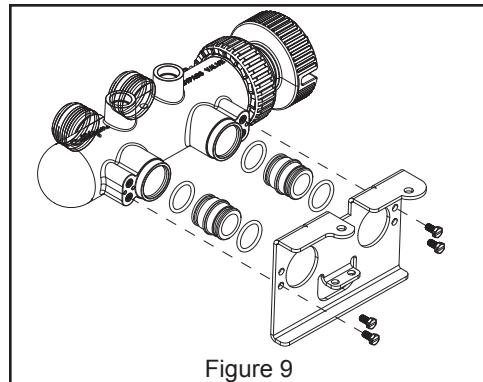


Figure 9

Bypass Valve Installation - 3/4" Medallist Soft-Minder® Meter Only

The Soft-Minder meter is placed between the bypass valve and the control in place of the couplings shipped with the Cul-Flo-Valv® (Figure 10). Make sure the meter is on the outlet port of the control and that it is installed with the arrow pointing in the direction of water flow. Four elongated bolts are packaged with the meter to hold the bypass valve to the back plate of the control. Lubricate all o-rings with silicone lubricant.



Caution! When reinstalling back plate to control valve, make sure the u-clip fully engages the two bottom holes of the bracket. Secure bracket from the top with the two mounting screws provided.

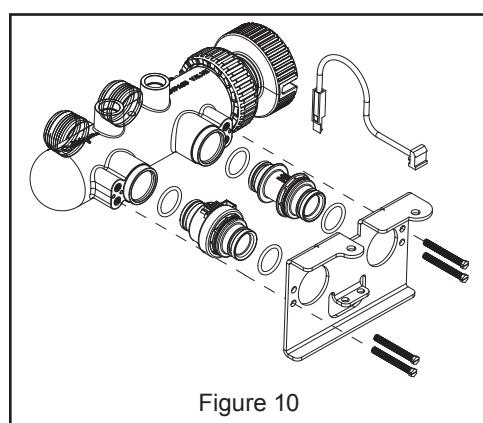


Figure 10

Bypass Valve Installation - 1" Medallist Plus Units

The bypass valve connects directly to the control valve with a pair of couplings and two assembly pins (Figure 11). Lubricate all o-rings on the couplings with silicone lubricant. On Soft-Minder® meter controls, the meter replaces the coupling on the outlet side of the control. The meter body fits in the same space as the coupling between the control valve and the bypass. Make sure that the arrow on the flow meter is pointing in the direction of flow (Figure 11).

Note: If the ground from the electrical panel or breaker box to the water meter or underground copper pipe is tied to the copper water lines and these lines are cut during installation of the bypass valve, an approved grounding strap must be used between the two lines that have been cut in order to maintain continuity. The length of the grounding strap will depend upon the number of units being installed. In all cases where metal pipe was originally used and is later interrupted by the bypass valve to maintain proper metallic pipe bonding, an approved ground clamp c/w not less than #6 copper conductor must be used for continuity. Check your local electrical code for the correct clamp and cable size.

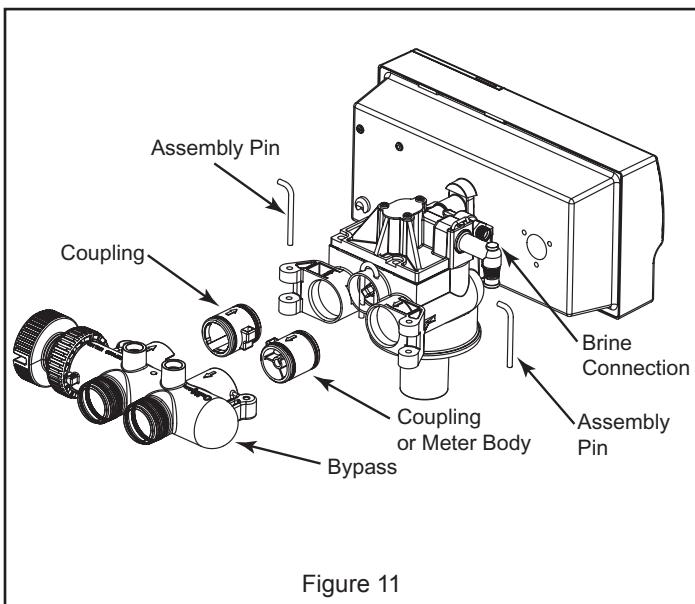


Figure 11

To bypass, turn the blue knob clockwise (see directional arrow on end of knob) until the knob stops as shown. DO NOT OVERTIGHTEN! (Figure 12a).

To return to service, turn the blue knob counter-clockwise (see directional arrow on the end of knob) until the knob stops as shown. DO NOT OVERTIGHTEN! (Figure 12b)

Drain Line Connection

Refer to Figure 8 and Table 2 & 3, under the applicable tank size for drain line length and height limitations.

- Remove 1/2" pipe clamp from end of drain elbow.
- Route a length of 1/2" drain line from the drain elbow to the drain.
- Fasten the drain line to the elbow with the clamp.
- Secure the drain line to the drain to prevent its movement during regeneration. A loop in the end of the tube will keep it filled with water and will reduce splashing at the beginning of each regeneration

Note: Waste connections or drain outlets shall be designed and constructed to provide for connection to the sanitary waste system through an air gap of 2 pipe diameters or 1 inch, whichever is larger.

Note: Observe all plumbing codes. Most codes require an anti-siphon device or air gap at the discharge point. The system and installation must comply with state and local laws and regulations.

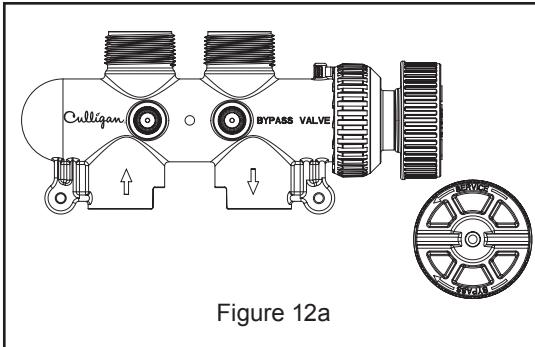


Figure 12a

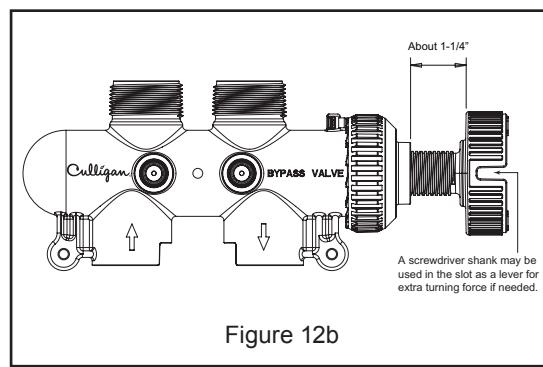


Figure 12b

Average Water Pressure psi	Height of Drain Discharge Above Floor on Which Filter Sets										
	4"	1 ft.	2 ft.	3 ft.	4 ft.	5 ft.	6 ft.	7 ft.	8 ft.	9 ft.	10 ft.
30	56	50	40	30	20	10					
50	112	106	96	86	76	66	56	46	36	26	16
70	143	137	127	117	107	97	87	77	67	57	47
90	153	147	137	127	117	107	97	87	77	67	57
120	159	153	143	133	123	113	103	93	83	73	63

Table 2 - Culligan® Automatic Water Filters, 8 Inch

Average Water Pressure psi	Height of Drain Discharge Above Floor on Which Filter Sets										
	4"	1 ft.	2 ft.	3 ft.	4 ft.	5 ft.	6 ft.	7 ft.	8 ft.	9 ft.	10 ft.
30	44	38	28	18							
50	103	97	87	77	67	57	47	37	27	17	7
70	129	123	113	103	93	83	73	63	53	43	33
90	145	139	129	119	109	99	89	79	69	59	49
120	153	147	137	127	117	107	97	87	77	67	57

Table 3 - Culligan® Automatic Water Filters, 10 Inch

Electrical Connections

The power cord needs to be connected to the plug-in transformer, wire orientation is not critical. Figure 13 shows the cord attachment to the transformer.

Note: Observe all state and local electrical codes.

Note: The plug-in transformer is rated for indoor installations only.

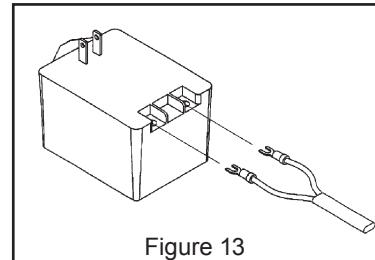


Figure 13

Settings

Your Culligan Medallist Water Filter is designed to perform efficiently on a wide range of water supplies. Before the unit can be recharged and put into service, several settings must be made.

Backwash

Backwash expands and loosens the media bed, and flushes away accumulated particulate matter. The backwash interval is preset at the factory for 10 minutes, which is adequate for most water supplies. It is recommended that backwash last just long enough so that the effluent from the drain line is clear. Backwash too long and water is wasted, not long enough and the tank becomes fouled with sediment. Refer to the Programming section to increase or decrease the backwash interval.

Pause Cycle

The Medallist Water Filter shares its timer with other water conditioning products which would use this period for the eduction and rinsing of salt, or other regenerant chemical. The pause cycle time is 2 minutes.

Rapid Rinse

Rapid rinse settles and compacts the media after backwashing and flushes any residual particulate matter from the bottom of the filter bed before returning the filter to service. Rapid rinse is set at the factory at 10 minutes. It may be extended, if desired. Refer to the Programming section to increase or decrease the rapid rinse interval.

Circuit Board

Circuit Board Connections

Refer to Figure 14 for all circuit board connections. Power terminals are located along the side edge of the circuit board. The connection marked 'MAIN' is for the main wire harness. The Soft-Minder connection is located in the upper left side of the board. Next to the meter connection is a connection marked 'BATT', which is for the optional battery back-up. All terminals are clearly marked to ease installation.

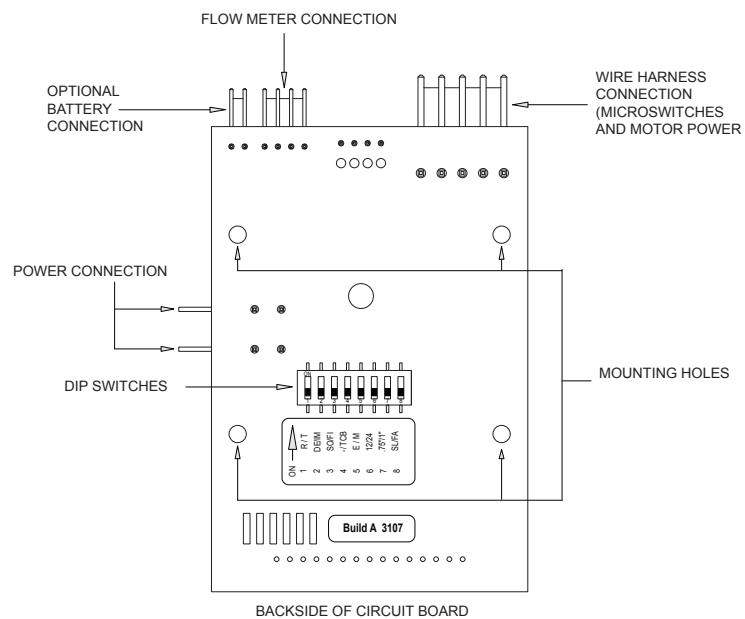
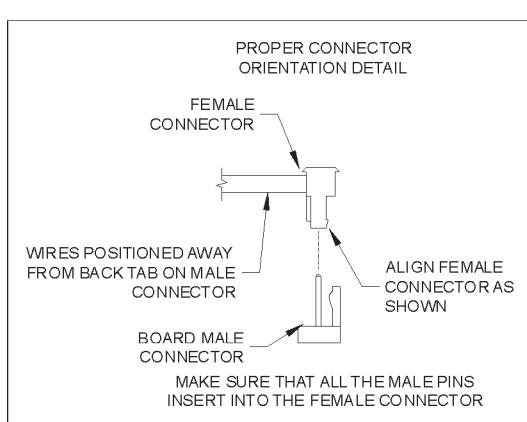


Figure 14

Programming

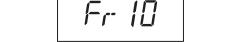
Dip Switch Definitions

The circuit board is shipped with all DIP switches in the off position. Prior to programming the controller some DIP switches may need to be moved to the ON position. Because each switch serves a specific purpose, please review the following information, moving the required switches to an ON position as necessary for each controller in the system. The definitions and purpose are as follows:

Note: Set DIP switch number 3 to the on position for filter applications.

Switch #	Abbreviation	Definition	Purpose
1	R / T	Run / Test	Off - Allows controller to function in a normal, operational mode. On - Places controller in test mode to verify operation of the board components & software.
2	D / I	Delayed / Immediate	Off - Regeneration will occur at Delayed Time of Day upon a controller receiving a valid regeneration initiation signal. On - Regeneration shall occur immediately upon a controller receiving a valid regeneration initiation signal, regardless of the time of day.
3	SO / FI	Softener / Filter	Off - The unit shall be operated as a softener. On - The unit shall function as a filter. The default time programmed for cycle #2 shall be 2 minutes.
4	- / TCB	Time Clock Back-up Disabled / Enabled	Off - The time clock backup option is not enabled. On - Allows the user to enable the time clock function of the control as a backup regeneration initiation option. This feature is used as a back up to a primary device such as a flow meter.
5	E / M	English / Metric	Off - The unit will function in standard English dimensions. On - The unit will function in standard metric dimensions.
6	12 / 24	12 Hour Clock / 24 Hour Clock	Off - All time keeping functions shall be based on an AM/PM basis. The PM icon shall be lit in the display as appropriate. On - Time keeping functions shall work on a 24-hour clock (military time). The AM/PM display icons will be disabled.
7	.75" / 1"	3/4" / 1" Control	Off - 3/4" Medallist Control Valve On - 1" Medallist Plus Control Valve
8	S / F	Standard Refill / Fast Refill	Off - The 0.45 gpm refill flow control is used to control the refill flow rate. Set in the off position for 8" and 10" units. On - The 0.80 gpm refill flow control is used to control the refill flow rate. Set in the on position for 12"

The programming menu for Medallist is outlined in the following table:

Setting	Display	Range Limits	Default	Comments
Time of Day		12:00 AM - 11:59 PM (12hr) 00:00 - 23:59 (24hr)	12:00 PM 12:00	12 / 24 hour function set with dip #6
*Time of Regeneration		12:00 AM - 11:30 PM (12hr) 00:00 - 23:30 (24hr)	2:00 AM 02:00	- Adjust time in 30 minute increments only
*Cycle 1 time		01 - 99 minutes	10 minutes	-Always active in Time Clock Mode
*Cycle 2 time		01 - 99 minutes	- Filter: 02 minutes	-Always active in Time Clock Mode
*Cycle 3 time		01 - 99 minutes	10 minutes	-Always active in Time Clock Mode (Filter)
*Regeneration Interval		Days - 01 to 99 days	03 days	

Hidden Programming Menu

(Accessed from service mode by holding the "+" key for 5 seconds)

*Delay / Immediate		Toggle Delay or Immediate	Delay	<ul style="list-style-type: none"> - Locks in a regen signal after a 3 hour or more power outage; regen can be set to go immediate or delay until the tor; - Only accessible from service mode, time of day display, by pressing and holding "+" for 5 seconds - (not in programming menu)
*Lock / Unlock		Toggle Lock & Unlock	Unlock	<ul style="list-style-type: none"> - Lock or unlock access to make program changes - Only accessible from service mode, time of day display, by pressing and holding "+" for 5 seconds - (not in programming menu)

• To be saved in EEPROM

Make sure either inlet water supply is turned off, then supply power to the timer. The display will power up flashing "12:00 PM" and the motor will energize and cycle the control, without stopping, to the home position. This is required to ensure that the control is in the home position.

The timer uses four buttons:

Button	Description
Set-up / Enter Key (Status)	Advance timer through display options
Regeneration Key (REGEN)	Initiate a regeneration
Toggle Down Key ("")	Decrease the setting
Toggle Up Key ("")	Increase the setting



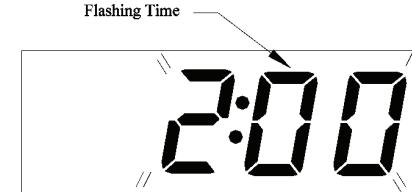
Time of Day

This setting is used to program the current time of day. When in this step the display will first show "tod" for two seconds.

After "tod" is displayed, "12:00 PM" will display (or the current set time if already programmed) and the minutes will flash.

- The minutes are adjusted with the "+" or "-" key until the correct value is displayed.
- Press the "Regen" key to flash the hours. Adjust with the "+" or "-" key until the correct time is displayed.

Pressing the "Status" key will move to the next programming step.
Pressing "Regen" will move back to the minutes adjust.



Time of Regeneration

This setting is used to program the time at which a regeneration is to occur in the delay mode, or in immediate mode with time clock backup on. The display will first show "tor" for two seconds.

After "tor" is shown the display will then show the default of 2:00 AM (or the current programmed time of regeneration if already set). The time can be adjusted in 30 minute increments by pressing the "+" or "-" keys.

Pressing the "Status" key will save the setting and move to the next programming step.

Backwash Time

This setting is used to program the cycle 1 time that is usually backwash. The time of the cycle is kept in minutes. The display will show "buu" in the display for two seconds and then the cycle time in the right most digits. Adjust the value with the "+" or "-" keys.

Pressing the "Status" key will save the setting and move to the next programming step.



Settline Time

This setting is used to set the time in minutes for cycle 2. This cycle is a settling time for filters. The display will show “br” in the left most digits and the cycle time in the right most digits. Adjust the value with the “+” or “-” keys.

Pressing the “Status” key will save the setting and move to the next programming step.

Fast Rinse Time

This setting is used to set the time in minutes for cycle 3. The display will show “Fr” in the left most digits and then the cycle time in the right most digits. Adjust the value with the “+” or “-” keys. Pressing the “Status” key will save the setting and move to the next programming step.

Regeneration Interval

This setting is used to set the days between regeneration in time clock mode. The display will show “REG” icon and “dAY” for two seconds and then display the number to change. Adjust the value with the “+” or “-” keys.

Pressing the “Status” key will save the setting and move to the next programming step.

Blank Display

After the last programming menu is displayed (menu will vary depending on mode of operation), pressing status will move to a blank display screen.

From the ‘blank display’, pressing the “+” key from the blank display will enter the diagnostics menu.

From the ‘blank display’, pressing the “-” key will enter the statistics menu.

From the ‘blank display’, pressing the “Status” key will exit programming mode and return to the service mode time display.

The “regen” key is ignored while in the ‘blank display’.

Hidden Programming Menu

(Accessed from the regular time of day display in service mode by holding the “+” key for 5 seconds).

Immediate Regeneration Override

This setting is used to determine whether an immediate or delayed regeneration should occur after a power outage greater than 3 hours. It applies only when dip #2 is set for “delay”. The display will show the REG icon and “dEL” or “Id” depending on the last saved setting (default to “dEL” if EEPROM has no saved value). Toggle between “dEL” and “Id” with the “+” or “-” key.

If set to “dEL”, then after power outage greater than 3 hours the “regen” icon will light and the regeneration will begin when the timer reaches the next programmed time of regeneration.

If set to “Id”, then after a power outage greater than 3 hours the regeneration will begin as soon as the control completes the homing cycle.

Pressing the “Status” key will save the setting and go to the next Hidden Menu setting.

Screen Locking

This setting is used to lock out the user from changing most of the program menu settings. When the “Loc” setting is saved, the only program menus that can be changed are “tod” and “tor”. The program menu settings will appear as normal but their values will not be able to be changed. (Note: The hidden menu can always be accessed and settings within the hidden menu can always be changed, even if “locked”.)

The display will show “Loc” or UnL” depending on the last saved setting (default to “UnL” if EEPROM has no saved value. Toggle between “Loc” and UnL” with the “+” or “-” keys.

Pressing the “Status” key will save the setting, exit the Hidden Menu and return to the regular time of day Service Mode display.



Loc



UnL

Manual Cycling

Manual Control Cycling

The control can be manually cycled through a regeneration to troubleshoot the control or verify that the set-up is complete. When a control is manually cycled back to the service position, the statistical counters of capacity remaining, days since last regeneration and the number of regenerations is in the last 14 days and the life of the unit are not to be reset or updated. If the control is allowed to time out from the last position back to service (Home), the applicable statistical counters are to be reset or updated. A manual cycling of the control can be accomplished by following the steps as outlined below.

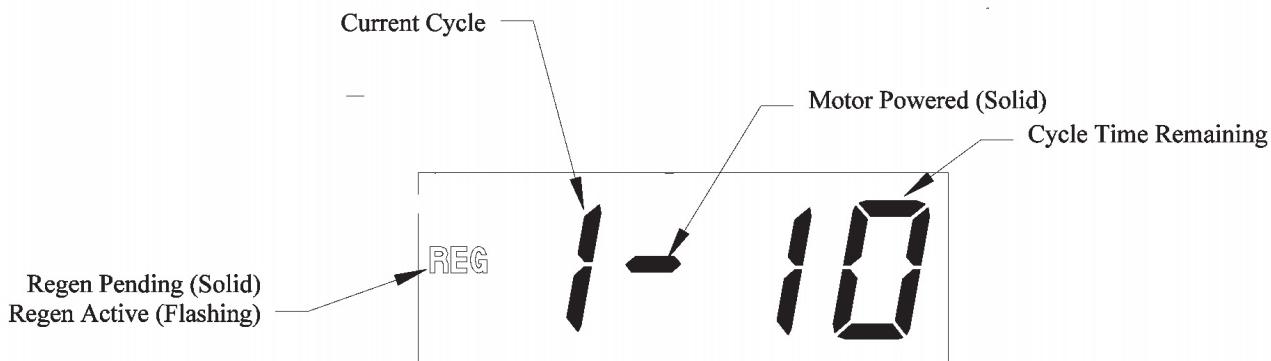
1. While in the service mode, press the "Status" key until the display goes blank.
2. Press the "+" key to display the current motor position.
3. Press and hold the "Regen" key for 5 seconds until the regeneration is started. Once regeneration is active, the "Regen" key will be ignored until the control returns to the service or "home" position.
4. The "REG" icon will flash and the motor will move the control to Backwash position.
5. Press the "+" key to cycle to the next position and remain there until the cycle times out or the control is manually indexed.
6. Continue to press the "+" key until the control returns to the service (Home) position. In order to step through the cycles again, repeat at step 3.

Note: if the "-" key is pressed at any time, the control will move back to the first item in the statistics menu. Pressing the "+" key from the statistics menu would move the display back to the current diagnostic cycle. The "+" key will be ignored once the control returns back to the home position.

While cycling the control basic diagnostics can be accomplished.

- The display shows the "REG" icon solid (if a regeneration is pending) or flashing (if in regeneration).
- The display is to show the current cycle ("H" for service, "1" for Backwash, "2" for Brine Rinse and "3" for Fast Rinse / Refill) in the left most segment.
- The status of the motor output is to be shown in the 3rd digit from the right. The center bar of the digit will light solid and the LEDs will turn off when the motor output is on.
- The cycle time remaining will be displayed in the two right most end digits.
- If a flow meter is attached, the phone icon will show solid and flash if the control is getting a flow signal from the flow meter.

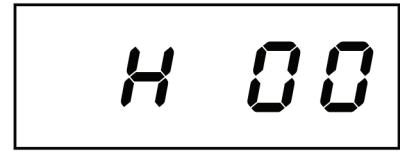
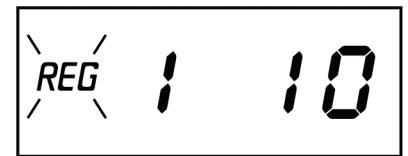
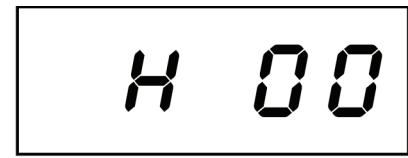
If a chlorinator is attached, the top bar of third digit from the right will show solid and flash when the chlorinator (low, med, or high) signal is present.



1. Press the status button to move past the programming steps until the display is blank. From blank display press the “+” key. An “H” will appear in the display. The control is in the HOME position.
2. Press and hold the regen button. The ‘REG’ icon will blink, and the motor will advance the control. A ‘1’ will appear. The unit is now in the BACKWASH position. The numbers to the right indicates the time remaining for the cycle.
3. Press the “+” key. A ‘2’ will appear in the display, along with the cycle time remaining. The control is in the Settline cycle.
4. Press “+” key. A ‘3’ will appear in the display, along with the cycle time remaining. The control is now in the FAST RINSE cycle.
5. Press the “+” key. An ‘H’ will appear in the display. The unit is in the HOME position. The ‘REG’ enunciator is no longer blinking.
6. Press the status key. Time-of-Day appears in the display.

Note: If the “+” key is pressed to cycle the value from position “3” to “Home”, the # regen counters will not be updated.

The control can be indexed through the various regeneration stages. For all steps, the cycle numbers do not appear or change, until the motor stops.



Service Check

The service mode allows one to view the number of regenerations in the past 14 days, the total number of regenerations the control has cycled through and the number of days since the last regeneration.

The statistical functions are reached by pressing the "Status" key until the screen blanks and then pressing the "-" key. Repetitive presses of the "-" key will cycle through the statistics mode. Pressing the "Status" key will exit statistics and move to the time display. The following table outlines the statistic function display, range limits and default setting:

Display	Range Limits	Comments
• Number of Regenerations - Last 14 days	0 to 99	<ul style="list-style-type: none">- Days counter is to be updated at 12:00 AM ONLY when dip #2 is on AND dip #4 is off; Otherwise update at whatever TOR is set for- Number of Regeneration is to be updated after a valid regeneration is complete (cycle 3 times out automatically)
• Number of days since last Regeneration	0 to 99	<ul style="list-style-type: none">- Days counter is to be updated at 12:00 AM ONLY when dip #2 is on AND dip #4 is off; Otherwise, update at whatever TOR is set for- After a valid regeneration is complete (cycle 3 times out automatically), the counter is to be reset to 0
• Number of Regenerations - Life of the Unit	0 to 9,999	Counter is to be updated after completion of valid regeneration cycle (cycle 3 times out automatically)

- To be saved in EEPROM before the control is powered down during a power outage.

Once the statistics menu is entered the information shown for each display is outlined below:

- "Regen" key is always ignored in statistics mode;
- Can enter directly into diagnostics mode by pressing the "+" key;
- When returning to statistics mode directly from diagnostics mode, always display the first statistic in the list as if statistics mode was entered for the first time (don't have to remember where it left off in the list);
- Can exit back to service mode by pressing the "status" key;
- Automatically times out back to service mode after 10 minutes of no key press activity;
- Drop all leading zeros;

Number of Regenerations in Last 14 Days

This display will show the number of regenerations that have occurred in the last 14 days. The display will first show "14dY" for two seconds and then display the number of valid regenerations that have occurred.



Number of Days since Last Regeneration

This display shows the number of days that have elapsed since the last regeneration. The display will show "dAYS" for two seconds and then the number of days that have elapsed since the unit completed its last valid regeneration.



Total Number of Regenerations for Life of Unit

This display will show the total number of regenerations that have occurred since installation. The display will show "totL" for two seconds and then display the total number of valid regenerations for the life of the unit.

Statistical Function Timeout

If no key activity occurs for a period of 600 seconds (10 minutes) while in statistics functions mode, the mode will time out and return to the time of day display. Pressing the "Status" key at any time will return the unit back to the time display.



totL



08

Start-up Procedure

Cullar® and Cullneu® Water Filters

- Connect the transformer to a grounded, 120 Volt, 60 Hertz outlet.
- Initiate an extra recharge by pressing and holding the “REGEN” button for approximately 5 seconds.
- SLOWLY place the bypass valve(s) in the service position.
- Place the filter in bypass as soon as water is observed flowing to drain, place the timer in the service position (refer to the SERVICE POSITION paragraphs in the SETTINGS section) and unplug the control.
- Allow the media to soak for 24 to 48 hours for Cullar and Cullneu models.
- Plug in the power cord, and set the timer to the correct time of recharge and time of day, place the bypass valve(s) in the service position.



Caution! If a sudden rush of water enters the filter, some of the media could be thrown up into the control valve.

Filtr-Cleer® Water Filter

- Connect the transformer to a grounded, 120 Volt, 60 Hertz outlet.
- Set the timer to the correct time of recharge and time of day.
- Initiate an extra recharge by pressing and holding the “REGEN” button for approximately 5 seconds.
- SLOWLY place the bypass valve(s) in the service position.



Caution! If a sudden rush of water enters the filter, some of the media could be thrown up into the control valve.



Warning! Although not normally necessary, should you need to disassemble any part of the control valve or remove the control from the tank assembly or associated plumbing, depressurize the unit first closing the main supply valve, then open a convenient faucet down stream from the water conditioner

During the recharge cycle, unfiltered water will be available to all the lines in the household. Immediately following recharge, the water to service will be filtered.

Recommended Preventative Maintenance Inspection Schedule

The Culligan Gold Series water filter has been designed to provide a good, consistent service life. Routinely inspecting the system may help avoid potentially costly breakdowns related to circumstances outside of the control of the dealer and/or user. The filter is for problem water use and routine maintenance is required. Contact your local Culligan dealer to perform routine maintenance.

Component	Suggested Inspection Frequency	Reason for Maintenance
Entire System	At Start-up, after infrequent use (idle for one week or more) or every 3 - 6 months if on a private water supply.	On private supplies, the appearance of off-tastes and odors, particularly if musty or “rotten egg” (caused by harmless sulfate-reducing bacteria) may indicate a need for the system to be sanitized.
Backwash Flow Controller	Every 12 months or every time service is performed on the system.	Build up of sediment, iron and/or other foreign materials (found in some water supplies but not necessarily all) could negatively affect system performance. Monitor item for normal or unexpected wear.
Media	As needed.	Cullneu Filter - As water passes through the Cullneu filter, the media slowly dissolves and neutralizes the water. The rate at which the Cullneu media dissolves depends on a number of factors such as temperature flow rate and pH. Add media when pH elevation no longer occurs. Cullar - Replace when taste odor or chlorine can no longer be removed. Filtr-Cleer - Media may need to be reconditioned or replaced depending on water characteristics.

Troubleshooting Guide

Problem	Cause	Solution
1. Unit has blank display.	A. Unit has no power.	A. Verify that unit is connected to a constant power source (Not an outlet on a switch).
	B. Defective plug-in transformer.	B. Replace plug-in transformer.
2. Regeneration occurs at incorrect time.	A. Timer setting incorrect.	A. Reset timer.
	B. Timer flashing.	B. Reset timer and verify that unit is connected to a constant power source.
	C. Circuit board set to immediate regeneration.	C. Set circuit board to delayed regeneration. Refer to 'Programming the option settings'.
	D. Incorrect programming.	D. Refer to the 'Programming' section and verify all settings.
3. Phone Icon is displayed.	A. Jammed seal pack or brine piston.	A. Replace the seal pack or brine piston as outlined in the 'Parts Replacement Guide' section.
	B. Defective cam microswitches	B. Replace cam microswitches
	C. Defective motor.	C. Replace the motor as outlined in the 'Parts Replacement Guide' section.
4. Unconditioned water to service.	A. Cul-Flo-Valv® is open or o-rings on Cul-Flo-Valv bypass stem are cut.	A. Close bypass valve or replace o-rings on bypass stem.
	B. Chemical storage tank is empty.	B. Add chemical to storage tank and verify that proper level of salt or chemical is maintained.
	C. Incorrect programming. (Salt dosage too low for influent hardness)	C. Refer to 'Programming' section and verify that settings are correct.
	D. Internal seal leak.	D. Replace seal pack as outlined in the 'Parts Replacement Guide' section.
	E. Excessive water usage.	E. Verify that programming is correct. For Time Clock units increase regeneration frequency.
	F. Unconditioned water in water heater tank.	F. Flush water heater to fill tank with conditioned water. Note: Follow water heater manufacturer's recommendation.
5. Loss of water pressure.	A. Inadequate mineral in media tank.	A. See problem 6 & 7.
	B. Control and/or resin bed plugged with debris or iron build-up.	B. Clean control and increase frequency of regenerations or length of backwash. Plant recondition if necessary.
	C. Inlet manifold plugged.	C. Remove control from tank and clean inlet manifold. Check if eductor screen/nozzle is also plugged.
	D. Control plugged with foreign material broken loose from recent plumbing work.	D. Clean control.

Problem	Cause	Solution
6. Loss of mineral to drain.	A. Improper drain line flow control.	A. Ensure that the control has the proper drain line flow control. (See Table 10)
	B. Air in water system.	B. Ensure that system has proper air eliminator control.
7. Mineral to service.	A. Control connected to tank backwards.	A. Verify that control is properly mounted to the tank.
	B. Defective outlet manifold.	B. Replace outlet manifold.
8. Continuous flow to drain.	A. Internal seal pack leak.	A. Replace seal pack as outlined in the 'Parts Replacement Guide' section.
	B. Seal pack or brine piston jammed in position.	B. Replace the seal pack or brine piston as outlined in the 'Parts Replacement Guide' section.
	C. Power failure while unit was in regeneration.	C. Restore power to unit. Verify that unit is connected to a constant power source.

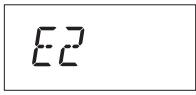
Circuit Board Troubleshooting

Error Mode

When a failure is detected, the control will generate and display an error or alarm code, depending on the type of failure, as shown in the table below.

In order to clear an error code (after correcting the problem), push and hold the "Status" key for 10 seconds. After the 10 seconds, the control will clear the error code and cycle the valve to service (Home). Other methods of clearing the error code are: powering down the control for 60 seconds, toggling a DIP switch or changing an input connection (adding or removing a Flow Meter). If the problem is still present after clearing the error code, the error code will again be displayed. While in error mode, the control will not function. When returning from Error mode, the control shall use the values stored in EEPROM unless a DIP switch was toggled or an input connection (Flow Meter) was changed. In those cases, the programmed values shall revert back to the defaults.

For E2 and E3 errors, the control is to attempt to return to home and stop. If the control is successful in finding and stopping in the home position it is to display the error code but return to functioning as normal. If the next regeneration is successful without errors the error code is to be removed and the control will function as normal.

Display	Error Description	Mode of Detection	Clearing Error / Alarm
	Motor Failure to Start (No switch changes)	If the valve fails to reach the desired state within 70 seconds of driving the motor. The control will attempt to start the motor 3 times for 70 seconds each time with a 60 second off period between each attempt.	Press and hold 'STATUS' key for 10 seconds
	Motor Failure to Stop (unexpected switch changes)	If the control detects changes in the Cam inputs when the motor is not supposed to be turning	Press and hold 'STATUS' key for 10 seconds
	Incorrect Cycle Position (switch changes out of sequences)	The control expects to be in a different position than that indicated by the Cam switch closures	Press and hold 'STATUS' key for 10 seconds

Circuit Board Troubleshooting

Most circuit board problems are caused by outside influences and it is not the board itself. Replacing the board may seem to work only because the cause hasn't reappeared – yet.

Let's start with what to check when you come upon a circuit board problem:

1. Are those switches aligned too closely to the cam?

There should be a small but obvious gap between the switches and the cam so that a "wobbling cam" doesn't accidentally bump the switch.

2. Has the seal pack been checked for free movement?

Feedback and experience has demonstrated that seal packs that are over-tightened create drag on the motor and delays that would result in an error code: If the motor never stops (still runs after the desired position is sensed, causing unexpected switch closures) OR if the motor gets stuck "timing out" and the control never sees any switch action.

3. Are all the wiring terminals tightly connected?

Sometimes a loose or poorly connected wire can give feedback to the board that would result in an error code or default.

4. After checking all of these possibilities you should run the diagnostics (Test Mode) on the board

Instructions are listed on page 29.

Listed below are some other circuit board problems and their explanations:

– Board skips the service position or only stops for a second in service before advancing to the backwash position

Board has been armed for regeneration. Let the board time out of all three cycles or reset and reprogram the board. Resetting the board can be done by connecting or disconnecting the meter cable.

– Motor goes round and round

Only one of two things can happen when this is the case; it can find its desired position or it gives you an error code. So, LET IT RUN until you find out which will occur.

- If the motor still runs or there is power to motor after the error code is displayed, then the triac is likely bad – change the board.
- If the error code is displayed and the motor is stopped (no power to the motor), check switches, cam and wire harness – the board got a signal it wasn't supposed to or a connection failed.

A word about triacs –

A triac is an electronic switch and can “latch on” when it becomes overheated from a laboring motor (tight seal pack). It may operate properly when it cools down. A continuously running motor could be caused by an overheated triac. Checking the seal pack and voltage draw and allowing the triac to cool down could give you favorable result and prevent the need to change the board. Otherwise, when it is sent to Returned Goods it could test good and be returned.

You clear an error code and it starts into regeneration

It was either in regeneration or has kept track of time since the error code occurred and it's trying to finish the regeneration. Reset and reprogram the board.

The board repeatedly defaults, resets or gains time

Look at the power supply or source. Most of these issues are caused by the power source, so-called “dirty power” having noise interference or incorrect voltage. This could be erratic fluctuations caused by other heavy power draws, poor wiring, low voltage wiring running along high voltage, having active electrical storms that causes “corruption” of the EEPROM. Consider the use of a surge protector or an uninterruptible power supply after you see this repeatedly.

If you suspect the power source is causing problems, take a voltage reading at the outlet, at the power connection on the board, and on the motor leads while the motor is running. We are looking for a consistent range of 108-132 volts at the receptacle and 22-28 volts on the board. Also, the wall transformer is only used to step down the voltage; it is not used for protection or filtering the power source.

Test Mode

In this mode the control can be put through a performance test to verify the operation of the board components. Moving dip #1 from service to test mode enters the test mode; the motor output should turn off (if it was on) upon entering test mode.

When entering test mode all program settings and statistical data should be stored in EEPROM. The test sequence is to follow the description as found in the table below. Upon exiting test mode, if a device connection is different (flow meter connected or disconnected) or a DIP switch setting is changed from the condition that was present when entering test mode, the control should behave as if the change was made while out of test mode. For example, if a flow meter was added and not removed while in test mode, the control shall load the flow meter defaults when exiting test mode.

Test Description	Display Information	Action Trigger
Start Test Mode	All LCD segments lit	DIP switch #1 set to on, all others off
Software version	Software version #	Press a key after entering test mode as above
Enter test mode	Blank Display	Press a key after displaying the software version #.
DIP switch #2	Display to show "2"	Turn on DIP switch #2
	Display to Blank	Turn off DIP switch #2
DIP switch #3	Display to show "3"	Turn on DIP switch #3
	Display to Blank	Turn off DIP switch #3
DIP switch #4	Display to show "4"	Turn on DIP switch #4
	Display to Blank	Turn off DIP switch #4
DIP switch #5	Display to show "5"	Turn on DIP switch #5
	Display to Blank	Turn off DIP switch #5
DIP switch #6	Display to show "6"	Turn on DIP switch #6
	Display to Blank	Turn off DIP switch #6
DIP switch #7	Display to show "7"	Turn on DIP switch #7
	Display to Blank	Turn off DIP switch #7
DIP switch #8	Display to show "8"	Turn on DIP switch #8
	Display to Blank	Turn off DIP switch #8
Status Key	Display to show "11"	Press Status Key
+ Key	Display to show "12" and motor to run for 15 seconds	Press + Key
- Key	Display to show "13" (and turns on Chlorinator output for 15 seconds IF chlorinator is connected)	Press - Key
Regen Key	Display to show "14"	Press Regen Key
Home Switch	Display to show "H" when Home switch closed	Close Home Switch
	Display to Blank when open	Open Home Switch
Position Switch	Display to show "P" when Position switch closed	Close Position Switch
	Display to Blank when open	Open Position Switch
Flow Meter	Display to show "Phone" icon when flow meter is connected	Connect Flow Meter
	Display to blink "Phone" icon when flow meter is sending pulses	Spin Flow Meter
Chlorinator	Display to show "Colon" icon when chlorinator is connected	Connect Chlorinator
	Display to blink "Colon" icon when chlorinator is turned on	Turn on Chlorinator when the plus key is pressed.

When exiting test mode, if the dip switches or sensors have not changed, the control is to restore all values from EEPROM, and resume where it left off after homing. If the dip switch or sensors have changed, the values should reset to factory defaults. In either case the valve should home itself upon exit of test mode.

Operation, Care & Maintenance

Cullneu® Water Filter Refill

As water passes through the Cullneu Water Filter, the media slowly dissolves and neutralizes the water. The rate at which the Cullneu media dissolves depends on a number of factors such as temperature, flow rate, and pH. Because these factors are so variable, it is difficult to determine how often new Cullneu media should be added. Tables 4 and 5 show the recommended intervals for inspection and replenishment of Cullneu mineral. The following procedure should be used to determine when new media should be added.

- Press and hold the “REGEN” button for approximately 5 seconds. Allow the control to move to the backwash position. Unplug the control.
- Place the filter in bypass by screwing the blue knob of the Cul-Flo-Valv® bypass fully inward or by closing the inlet and outlet valves and opening the bypass valve (three valve bypass).
- Remove the Refill Port from the port opening for 10” tank. For 8” tanks, the control must be removed.



Warning! Some water supplies contain potentially hazardous gases. Do not inspect the interior of the tank using a spark or heat source, or an explosion may result!

- Using a yardstick, measure the distance between the top of the media and the back top edge of the port opening (this distance is the freeboard). For eight-inch units, if the freeboard is greater than 17 inches, add enough Cullneu media to decrease the freeboard to 11 inches. For ten-inch units, if the freeboard is greater than 27 inches, add enough Cullneu media to decrease the freeboard to 21 inches.
- Wipe the port opening free of media and replace the Refill Port. **Make certain the cap is securely locked into place for 10” tanks.** Reassemble the control to the tank for 8” units.
- Place the bypass valve(s) in the service position, plug in the control, and re-set the time of day. Allow the filter to continue the backwash and rinse cycles. The control will then return to the service position.

Use of Bypass Valve

Depending on where the particular installation was made, the outside sill cocks may or may not be served by filtered water. Ideally, all lines not requiring filtered water should be taken off upstream of the filter. This is not always possible, however, due to the construction of the house, or the difficulty or expense of rearranging the piping on older homes.

You should bypass the filter:

- If the outside lines do not bypass the water filter and you do not wish to waste filtered water on lawn sprinkling or other outside uses.
- If no water will be used for several days and you want to save water by not allowing the unit to backwash.
- If you wish to inspect or work on the valve.
- If a water leak from the valve is evident.

Cul-Flo-Valv Bypass

With the blue knob screwed fully outward (knob up against the barrel of the valve, figure 17, page 13), water is routed through the water filter. Water may be bypassed around the filter by screwing the blue knob fully inward. Avoid overtightening the valve stem when shifting from one position to another.

Care and Cleaning

Protect the operation and appearance of the water filter by following these precautions:

- Do not place heavy objects on top of the control valve cover.
- Use only mild soap and warm water to clean the exterior of the unit. Never use harsh abrasive cleaners or compounds which contain acid or bleach.
- Protect the conditioner and drain line from freezing temperatures.
- Reset the timer as soon as possible after any interruption of electrical power to keep the unit on its normal schedule.

CO ² (GPG)	8 Inch Neutralizers; Mineral Replenishment Interval		
	2 Persons	3	4
	150 gpd	225	300
3			
4	6		3
5			
6	3		
7			
8	3		
9			
10			

Table 4

CO ² (GPG)	10 Inch Neutralizers; Mineral Replenishment Interval				
	2 Persons	3	4	5	6
	150 gpd	225	300	375	450
3	A				
4		6			
5				3	
6					
7	6		3		
8					
9					
10					

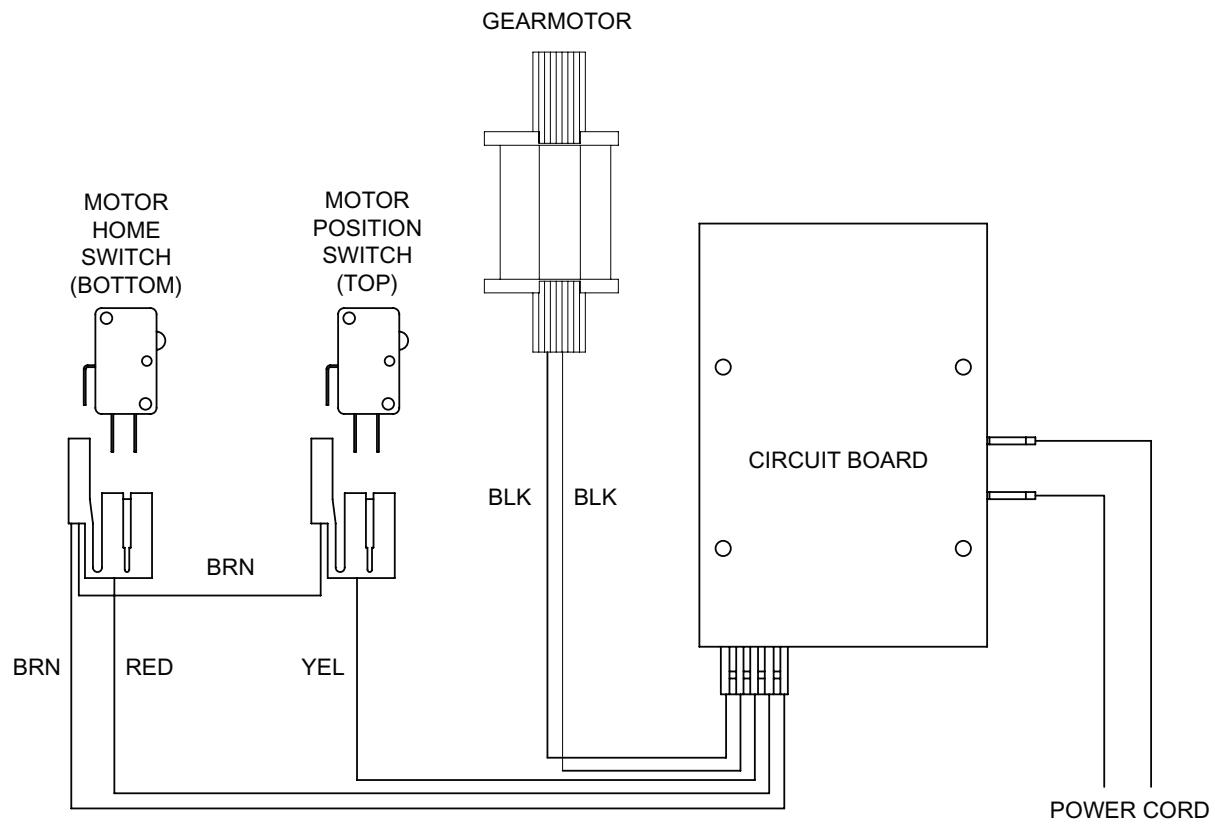
Table 5

A - check and replenish annually

6 - check and replenish every 6 months

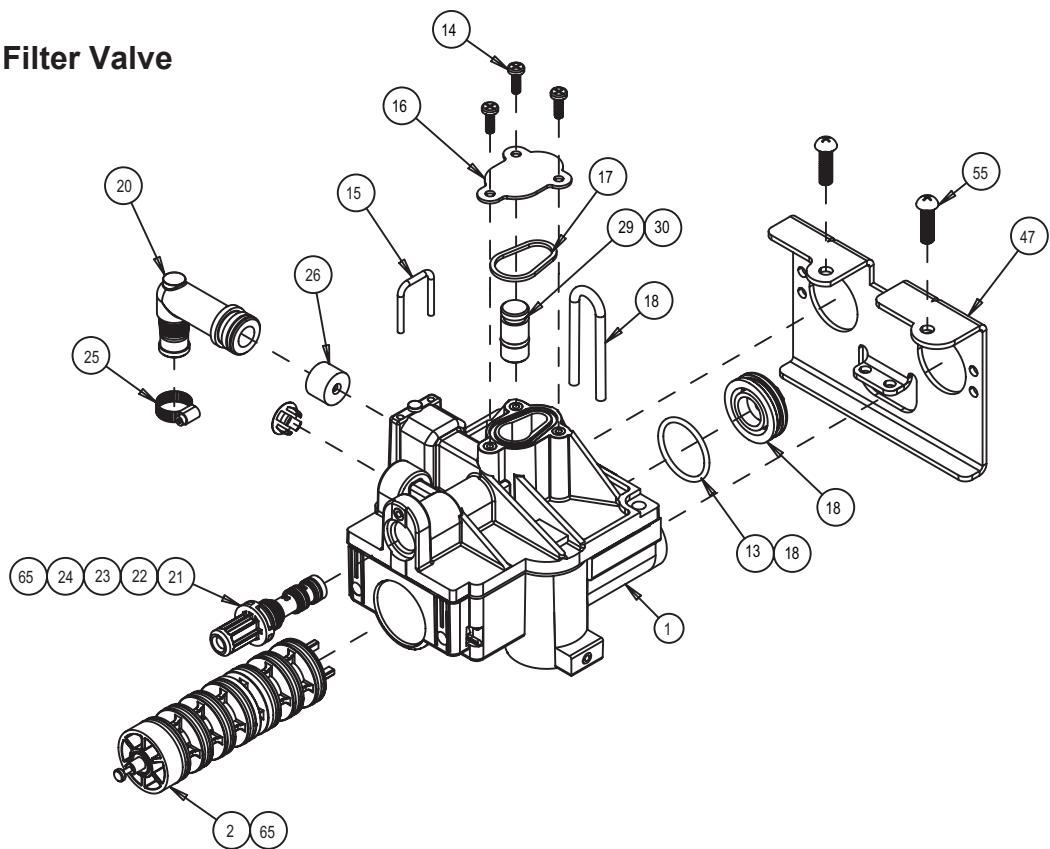
3 - check and replenish every 3 months

Wiring Diagram

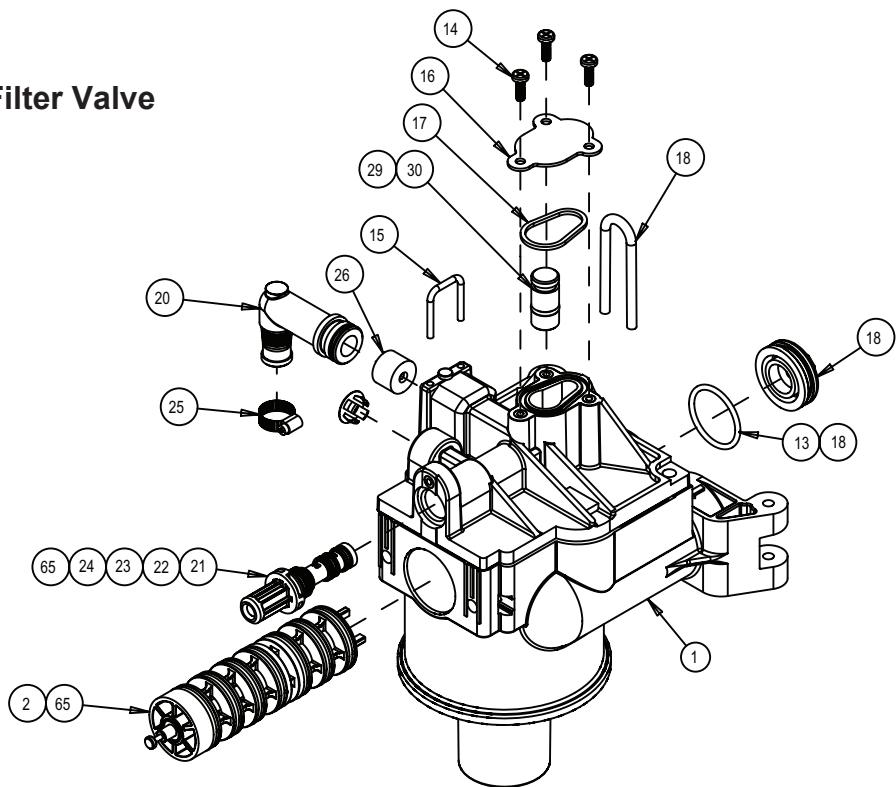


Parts List

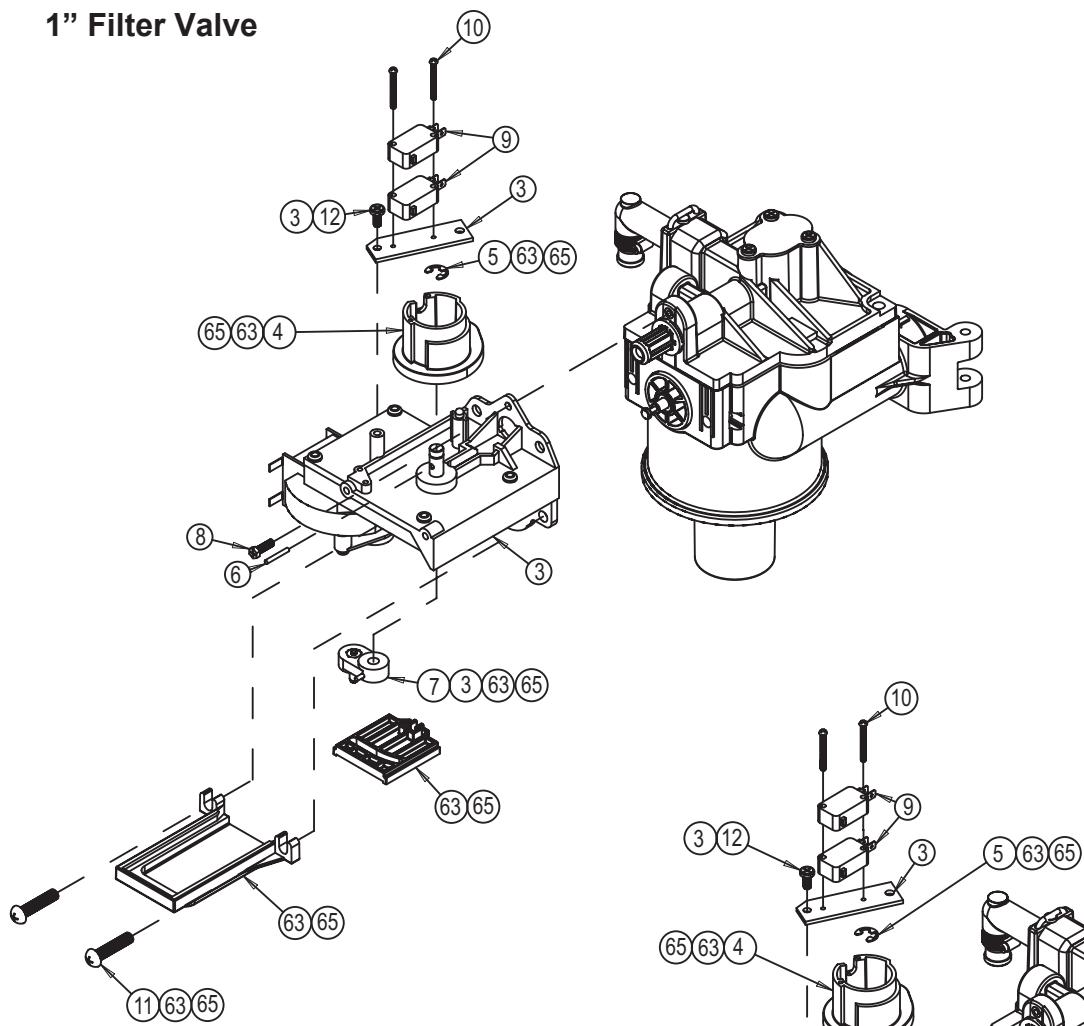
3/4" Filter Valve



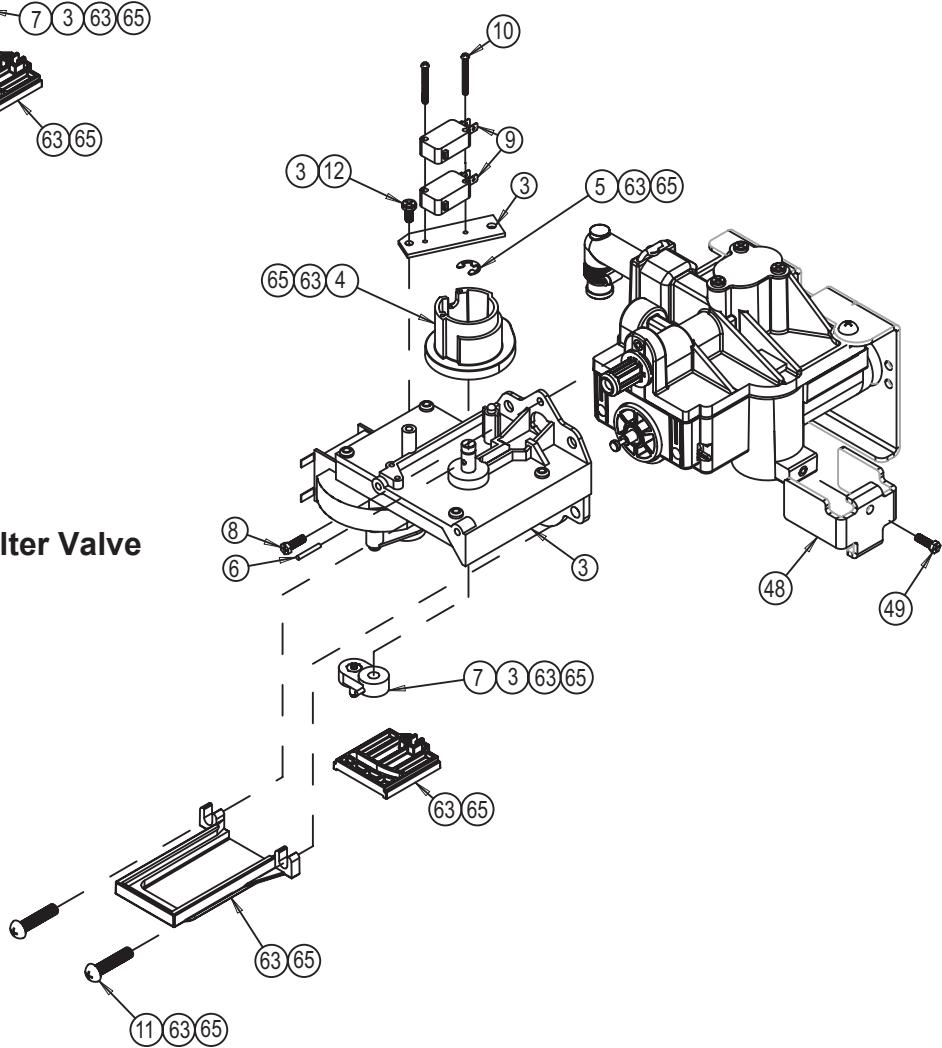
1" Filter Valve

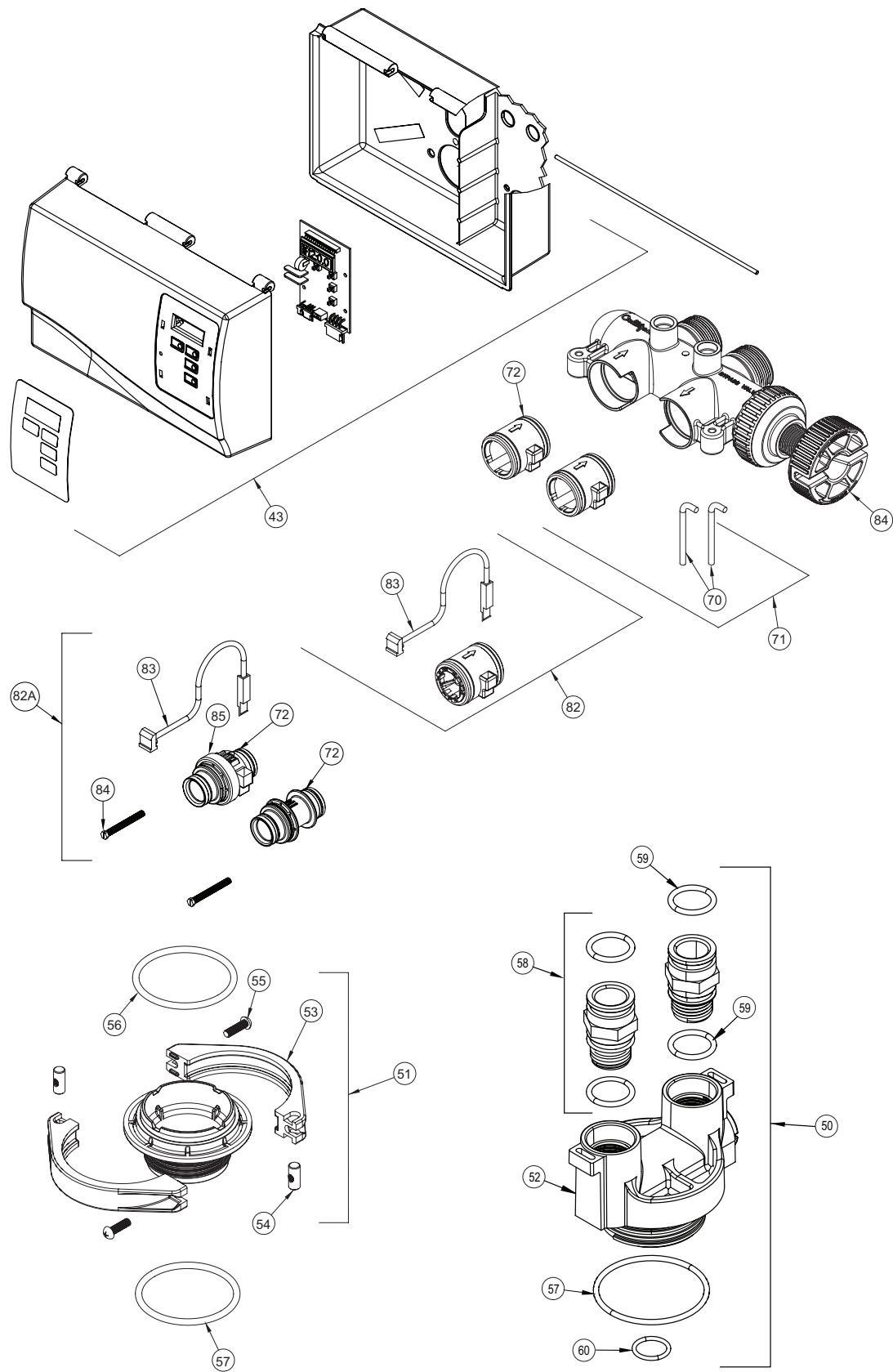


1" Filter Valve



3/4" Filter Valve





Power Valve Service Parts List

Item #	Part #	DESCRIPTION	Quantity/Pack	Valve Size	
				3/4" Valve	1" Valve
1A	01013976	Control Valve Body 1"	1 Each		X
1B	00449865	Control Valve Body 3/4"	1 Each	X	
2	01013083	Seal Pack Assembly	1 Each	X	X
3A	01014179	Drive Motor Kit 24V	1 Each	X	X
4	P1013031	Drive Cam	10 Each/Pack	X	X
5	P1013043	Retaining E-ring	10 Each/Pack	X	X
6	00445246	Pin	1 Each	X	X
7	P1013677	Bell Crank/Follower Kit	10 Each/Pack	X	X
8	P1001784	Screw, motor retaining, top	25 Each/Pack	X	X
9A	P1003244	Microswitch 24v	10 Each/Pack	X	X
10	P0448686	Screw, Microswitch retaining	25 Each/Pack	X	X
11	P0318452	Screw, Motor retaining, bottom	25 Each/Pack	X	X
12	P0318455	Screw, Microswitch Plate	25 Each/Pack	X	X
13	P0444914	O-ring, Rear Seal	10 Each/Pack	X	X
14	P0448687	Screw, Eductor Cover	25 Each/Pack	X	X
15	P0447387	Clip, Drain Elbow	25 Each/Pack	X	X
16	P0401022	Eductor Cover	10 Each/Pack	X	X
17	P0445797	Seal, Eductor Port	10 Each/Pack	X	X
18	00448126	Plug, Body, Rear	1 Each	X	X
19	00448128	Clip, Body, Rear	1 Each	X	X
20	01017758	Drain Elbow Assembly	1 Each	X	X
21B	P1001258	Repl Eductor Sleeve (Filter)	10 Each/Pack	X	X
22A	P0447986	O-ring, Eductor Sleeve, Small	25 Each/Pack	X	X
23A	P0308407	O-ring, Eductor Sleeve, Large	25 Each/Pack	X	X
25	P0451701	Hose Clamp, Drain	25 Each/Pack	X	X
26C	P0331636	FC Washer, 3.5 GPM Green	10 Each/Pack	X	X
26E	P0331637	FC Washer, 4.5 GPM Red	10 Each/Pack	X	X
26F	P0401031	FC Washer, 5.5 GPM Black	10 Each/Pack	X	X
26G	P0708008	FC Washer, 7.0 GPM Black	10 Each/Pack	X	X
27	P1014426	Spacer, Flow Control	10 Each/Pack	X	X
29	P0448668	Eductor Plug assy (Filters) w/O-rings	10 Each/Pack	X	X
30A	P0308437	O-Ring, Eductor Throat/Plug, Large	25 Each/Pack	X	X
31A	P0308438	O-Ring, Eductor Throat, Small	10 Each/Pack	X	X
44A	P1014734	Wire Harness - CB Gold/Medallist	5 Each/Pack	X	X
45B	P1014787	Power Cord - Medallist	5 Each/Pack	X	X
46	P1000372	Cord Grip (Power Cord)	25 Each/Pack	X	X
47	01004689	Bracket - 3/4" Medallist Rear	1 Each	X	
48	01005130	U-clamp - 3/4" Medallist	1 Each	X	
49	P0448687	Screw, U-clamp, 3/4" Medallist	25 Each/Pack	X	
50A	01013971	Tank Adapter Kit, ACME, Medallist	1 Each	X	

Item #	Part #	DESCRIPTION	Quantity/Pack	Valve Size	
				3/4" Valve	1" Valve
52A	01013958	Tank Adapter, 1" Valve	1 Each		X
52B	00444808	Tank Adapter, 3/4" Valve, ACME threads	1 Each	X	
52C	00403523	Tank Adapter, 3/4" Valve, NPSM threads	1 Each	X	
53	P1013959	Tank Clamp, 1" Valve	10 Each/Pack		X
54	P1013669	Tank Clamp Pin, 1" Valve	10 Each/Pack		X
55	P0318383	Tank Clamp Screw, 1" Valve/3/4" bkt	10 Each/Pack		X
56	P1014848	O-ring, Large, 1" Valve to Tank Adapter	25 Each/Pack		X
57A	P0440052	O-ring, 3/4"/1" Valve Adapter to ACME Tank	25 Each/Pack	X	X
57B	P0308447	O-ring, 3/4" Valve Adapter to NPSM Tank	10 Each/Pack	X	
59	P0333957	O-ring, 3/4" Couplings to Tank	25 Each/Pack	X	
60	P0308427	O-ring, Manifold, 3/4" Valve	50 Each/Pack	X	
65A	01013777	Seal Pack/Sleeve/Cam (Filters)	1 Each	X	X
67A	01018425	Bypass Valve - 3/4" / 1" Rotary	1 Each	X	
68B	01018755	Rebuild Kit - 1"/1-1/4" Rotary Bypass	1 Each		X
70	P1009075	Retaining Clip, 1" Bypass valve	10 Each/Pack		X
71A	01013985	Coupling Kit - 3/4" Bypass	1 Kit	X	
71B	01014033	Coupling Kit - 1" Bypass	1 Kit		X
72A	P0308427	O-ring, 3/4" Couplings/Meters	50 Each/Pack	X	
72B	P1009099	O-ring, 1" Couplings/Meters	50 Each/Pack		X
73	P0330667	Coupling, 3/4" (no O-rings)	10 Each/Pack	X	
74	P0318546	Screw, 3/4" Couplings	25 Each/Pack	X	
72B	P1009099	O-ring, 1" Couplings/Meters	50 Each/Pack		X
73	P0330667	Coupling, 3/4" (no O-rings)	10 Each/Pack	X	
74	P0318546	Screw, 3/4" Couplings	25 Each/Pack	X	
75A	01010783	1" Copper Adapter Kit, (1" Bypass)	1 Each		X
75B	01016564	3/4" Copper Adapter Kit (1" Bypass)	1 Each		X
75C	P1019783	3/4" Copper Adapter Kit (3/4" Bypass)	10 Sets/Pack		
76A	01016565	3/4" Elbow Copper Adapter Kit (1" Bypass)	1 Each		X
76B	P1019782	3/4" Elbow Copper Adapter Kit (3/4" Bypass)	10 Sets/Pack	X	
79	P1009856	Gasket, Copper Plumbing Adapters	25 Each/Pack		X
81A	01018248	Plumbing Adapter Kit - 1" NPT	1 Each		X
81B	01018249	Plumbing Adapter Kit - 1-1/4" NPT	1 Each		X
82A	01012905	Meter Kit - 3/4" w/wire harness	1 Each	X	
82B	01011188	Meter Kit - 1" w/wire harness	1 Each		X
83	01008070	Wire Harness, 3/4"/1" Meters	1 Each	X	X
84	P1012820	Screw, 3/4" meter kit	25 Each/Pack	X	
85	P1013749	Quad Ring, 3/4" meter kit	50 Each/Pack	X	
86	01018133	Transformer, Dual Output	1 Each	X	X
87	01015972	Transformer, Outdoor Models, 120/24	1 Each	X	X
89	01013839	Backup Battery, Gold	1 Each	X	X

Filter Tank

Part No.	Description
00441897	Replacement Tank, 8", w/ Manifold, Empty
01014892	Replacement Tank, 10" x 54", w/ Manifold, Empty
01014572	Replacement Tank, 10" x 54", w/ 1 1/4" Manifold, Empty
01014042	Replacement Tank, 10" x 54" w/ fillport and Manifold, Empty
01000819	Outlet manifold, 8"
01012829	Outlet manifold, 10" x 54"
01014539	1 1/4" Outlet manifold, 10" x 54"
P0308427	O-ring (outlet manifold for 3/4" control)
P1009099	O-ring (outlet manifold for 1" control)
01009847	Top Strainer, Fine Slot, Medallist Plus
01011195	Top Strainer, Wide Slot, Medallist Plus
01014508	Top Strainer, Fine Slot, Medallist 8"
01014507	Top Strainer, Wide Slot, Medallist 8"

* Not Illustrated